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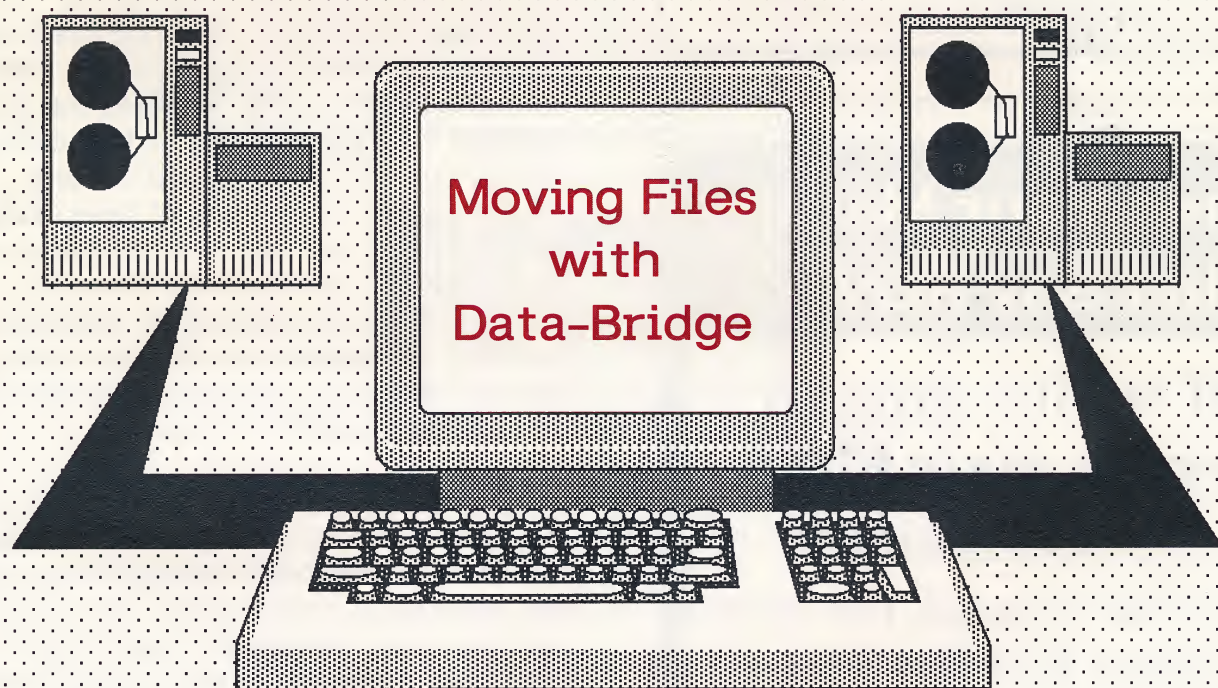
PRAGMA's

PRODUCT PROFILES

News And Information For Pick™ Operating System Users

Issue Number 9

December 1984



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Moving Software With Data-Bridge

Sooner or later, almost every Pick installation outgrows its computer and is faced with migrating to a new, and possibly very different, machine. Determining software compatibility (what code needs to be changed to let old programs successfully execute on a new computer) is the problem that usually receives the most attention during a conversion project. But the related problem of hardware compatibility (physically moving programs from one computer to another) can also be a significant task. Although all computers offer convenient media such as disks or tapes for moving data between different machines of the *same* brand, moving from one brand of computer to another can be very difficult, because two different computers often rely on incompatible media. It sometimes seems a new recording medium is invented each time a new computer is designed. For example, the various computers used by our own office depend on *nine* different types and formats of tapes, floppies, and cartridges, and each is incompatible with all the others! The current plethora of computer media has become an especially bad headache for dealers and software houses that have to support and distribute software for many different brands of machines.

So if your old computer writes to tapes only, and your new machine can read disks only, how can you move your software onto your new computer? That's exactly the problem we faced when we recently had to move about five megabytes of programs and data from some Pertec hardware to a Zebra 750. One solution is communications software (a "send" program running in the old computer, and a "receive" program running in the new computer) that can transmit files over a wire, port-to-port. To enable us to perform that type of transfer, while at the same time providing their product for review in this issue, Interactive Systems (2432 W. Peoria Ave. #1303, Phoenix, AZ 85029) agreed to

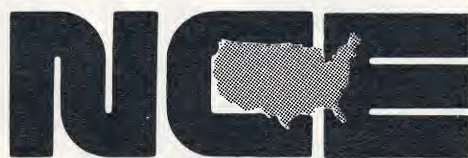


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send us a copy of Data-Bridge, their \$395 software package designed to transmit files from one Pick machine to another. (Note that Data-Bridge is intended to be used as a tool to occasionally move files between machines, such as for a conversion, as opposed to being a general telecommunications package for daily data transfer.)

Data-Bridge includes source code and was delivered to us as an account save. Also in the package were 14 pages of documentation and a cover letter containing a number of helpful hints. Since Data-Bridge is typically delivered on media for just one machine (in our case, the Zebra), the package includes some special code giving Data-Bridge the ability to transmit all or parts of itself to another machine, using the Editor as a receiver. That made it easy for us to send the transmission half of Data-Bridge over to the Pertec side of our equipment.

Data-Bridge has a few special requirements. Since a type-ahead buffer is required on the receiving machine, transfers to a Microdata will not work. Also, the transmitting machine sends the data to a terminal, which then passes the data on to the receiving computer via the terminal's auxiliary port, which is normally designed for a slave printer. This means the user may have to do some minor research about wiring and the auxiliary port's control codes to effect the correct protocol and cable connections, but that is probably a simple and familiar task for most data processing personnel.

Data-Bridge works by sending information in blocks to the receiving machine and then briefly waiting for the receiving machine to process the block. Since no handshaking (control signal or verification returned by the receiver) is used, the sending computer never has to receive while in the middle of a

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transmission. Therefore, the sender doesn't need an input type-ahead buffer, and a single version of Data-Bridge's transmitting code can send from any Pick computer, even a Microdata. Unfortunately, transmissions may be slower than necessary because of extra idling while waiting for the receiver to process data blocks. Our own experiments have shown that by including handshaking (which is not difficult to implement), transfers can avoid superfluous wait states and achieve fast, error-free transmissions. Data-Bridge would probably be a better product if it also offered handshaking.

Two parameters control Data-Bridge's performance. The *block size* controls the amount of data in each transmission burst, and the *delay factor* controls the wait between bursts. The best block size is easy to guess (preferably half of the type-ahead buffer length), although the documentation doesn't mention how to figure that out: hit keys while the machine is busy and not

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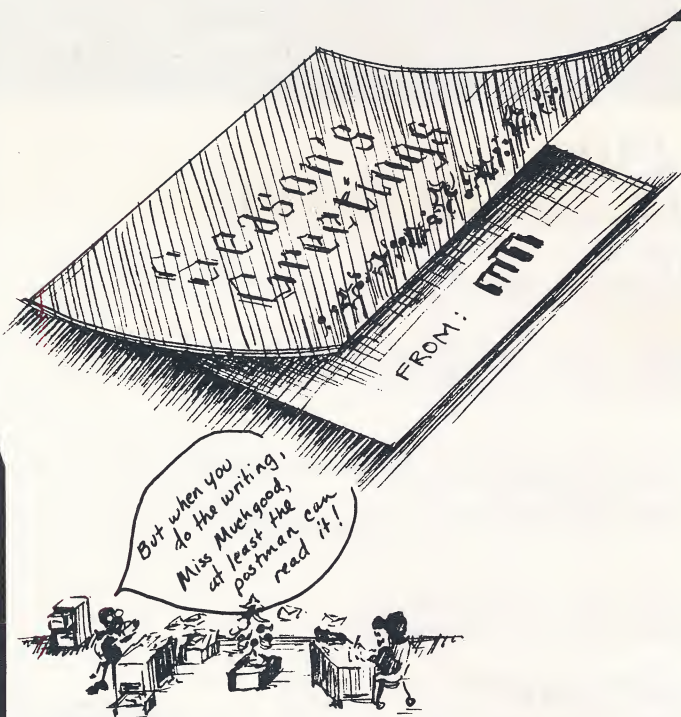
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waiting for input, such as during a sort. The number of keys that can be hit before the machine complains by beeping is the size of the input buffer. The documentation provides adequate guidelines for setting the delay factor, although we found we squandered almost a day experimenting with different settings, trying to find the optimum for us. Eventually, we just got tired of tweaking the parameter, so we set the delay to a safe but slow value, and got on with the transfer. Some very casual calculations showed we were transmitting at less than 500K bytes per hour, well below half the rate we probably could have obtained with a better adjustment of the delay factor.

Data-Bridge assumes the user has created equivalent but empty files on the receiving machine, and accepts various forms of file and item specification lists that indicate what data is to be transmitted. Input lists can

specify combinations of one or more or all items in specific files, SELECT lists of items, lists of files and accounts, and so on. Control characters in files can be transmitted, but master dictionaries, "D", "DX", "DY", "DC" items in dictionaries, and binary data pointed to by "CC" items can't be sent. The only error checking that Data-Bridge performs is counting bytes per item and items per file, which are not very reassuring measures of an accurate transmission, since a byte can be garbled and those checks won't let Data-Bridge detect the error. The documentation mentions using CHECK-SUM commands to compare the contents of original and transmitted files. We've noticed that CHECK-SUM is not only modulo-sensitive (not a serious problem, since the received files can simply be created with the same modulo as the original files), but also that our Zebra happened to truncate superfluous attribute delimiters when saving data, making



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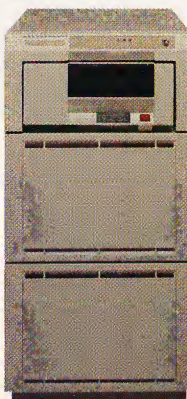


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it difficult to determine if CHECK-SUM mismatches were because of transmission errors or the Zebra's tendency to truncate.

During the two days we used Data-Bridge, we were able to successfully and fairly easily transmit large quantities of files and items. However, we did run into one problem: we found at least two large BASIC programs (out of a few hundred) that would not transmit without size errors, regardless of how high we set the delay factor. Temporarily breaking those two programs up into smaller items seemed to be the only way we could work around this particular problem. Interactive Systems verified they have encountered this type of problem before, but only on two machines: the low-end Zebra and Ultimate models, apparently because of those smaller machines' limited performance and throughput. They assured us that Data-Bridge has successfully transmitted 100% of all user data on all other machines and models the product has been tried on.

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Can we recommend Data-Bridge? Yes, if you're moving files from an unbuffered, difficult-to-communicate-with machine like the Microdata. Data-Bridge does a good job of providing the necessary send-and-wait controls for transmitting in that kind of environment. No, we obviously can't recommend it if you're sending to a low-end Ultimate or Zebra, since Data-Bridge can't seem to guarantee error-free transmission of huge items like BASIC programs to those machines.

In all other cases, Data-Bridge does do the job, but we recommend that potential users also look into the alternatives, perhaps even a home-grown utility program. That's because we've found that a knowledgeable, experienced programmer can easily write a fast, foolproof, port-to-port file transfer utility for Pick machines (*with error checking!*) in a matter of just an hour or two. If an installation can't generate the necessary tool that quickly, then the cost of their efforts will certainly exceed Data-Bridge's \$395 price tag, and they should instead just buy the program and get their conversion over with as quickly as possible. Δ

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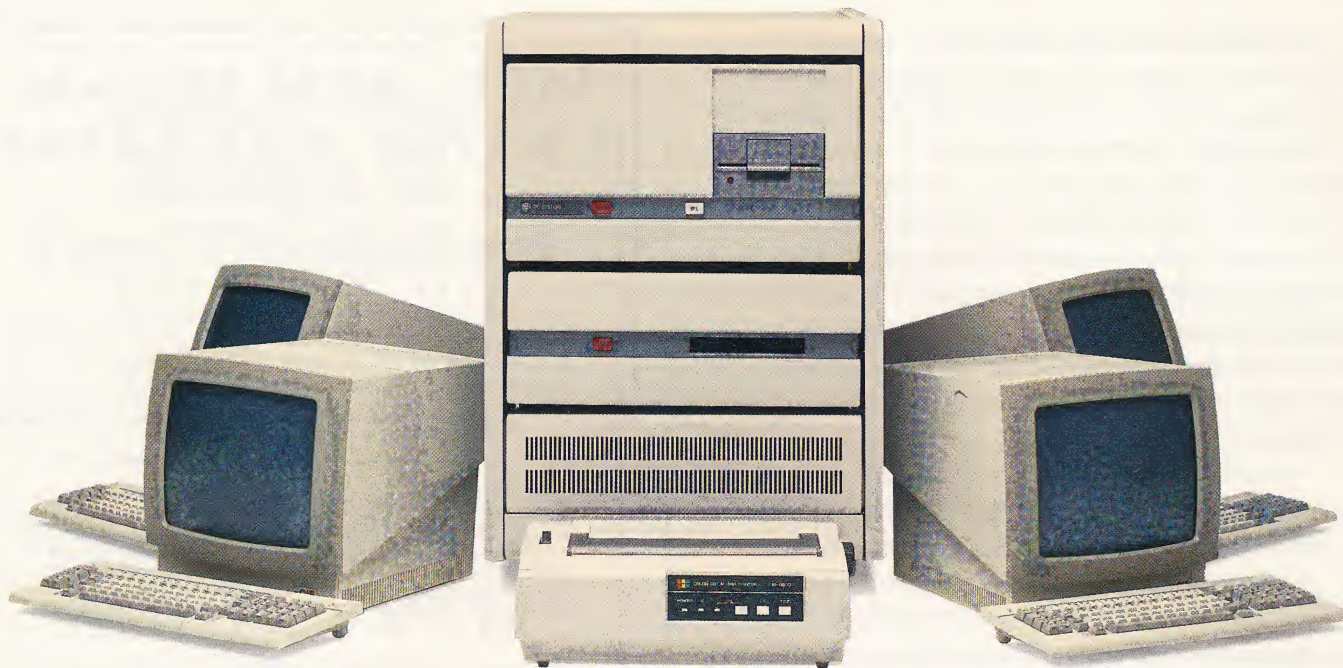
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